

- Claim 15 A method for treating a subject with a pathological condition involving a gamma interferon mediated effect in progression of said pathological condition, comprising administering an amount of a hapten modified peptide to said subject sufficient to exert a therapeutic effect on said subject, wherein said hapten modified peptide comprises a backbone of amino acids, wherein a penicillin antibiotic molecule is bound to at least one of said amino acids.
- Claim 16 The method of claim 15, wherein said penicillin is penicillin G, penicillin V, or ampicillin.
- Claim 17 The method of claim 15, wherein said pathological condition is an autoimmune disease.
- Claim 18 A method for determining predisposition of a subject for a hypersensitivity reaction against a penicillin, a part of a penicillin, or a derivative of a penicillin, comprising contacting a sample of peripheral blood monocyte cells from said subject with a hapten modified peptide, said hapten modified peptide comprising a backbone of amino acids and a penicillin antibiotic molecule bound to at least one of said amino acids and measuring the effect of said hapten modified peptides in cells.
- Claim 19 The method of claim 18, comprising measuring proliferation of antigen responsive T cells.
- Claim 20 The method of claim 18, comprising measuring at least one of gamma interferon expression and interleukin -4 expression.
- Claim 21 The method of claim 18, wherein said penicillin is penicillin G, penicillin V, or ampicillin.
- Claim 22 The method of claim 18, wherein said backbone of amino acids comprises a lysine residue to which said penicillin antibiotic is bound.
- Claim 23 The method of claim 18, wherein said backbone of amino acids comprises a tyrosine anchor, and said penicillin antibiotic is bound to an amino acid at position 3, 5, or 8 from said tyrosine anchor.
- Claim 24 A method for desensitization of a subject suffering from a hypersensitivity reaction, comprising administering to said subject a hypersensitivity reaction desensitizing

amount of a hapten modified peptide which contains a backbone of amino acids, wherein a peptide antibiotic molecule is bound to at least one of said amino acids.

- Claim 25 The method of claim 24, wherein said penicillin is penicillin G, penicillin V, or ampicillin.
- Claim 26 The method of claim 15, wherein said backbone of amino acids consists of 8-20 amino acids.
- Claim 27 The method of claim 25, wherein said backbone of amino acids consists of 10-18 amino acids.
- Claim 28 The method of claim 24, wherein said backbone of amino acids consists of 8-20 amino acids.
- Claim 29 The method of claim 27, wherein said backbone of amino acids consists of 10-18 amino acids.
- Claim 30 The method of claim 15, wherein said backbones of amino acids comprises a lysine residue to which said penicillin antibiotic molecule is bound.
- Claim 31 The method of claim 25, wherein said backbone of amino acids comprises a lysine residue to which said penicillin antibiotic molecule is bound.
- Claim 32 The method of claim 15, wherein said backbone of amino acids comprises a tyrosine anchor, and said penicillin antibiotic is bound to an amino acid at position 3, 5 or 8 from said tyrosine anchor.
- Claim 33 The method of claim 25, wherein said backbone of amino acids comprises a tyrosine anchor, and said penicillin antibiotic is bound to an amino acid at position 3, 5 or 8 from said tyrosine anchor.
- Claim 34 The method of claim 29, wherein said backbone of amino acids comprises a tyrosine anchor, and said penicillin antibiotic is bound to an amino acid at position 3, 5, or 8 from said tyrosine anchor.
- Claim 35 The method of claim 30, wherein said backbone comprises a tyrosine anchor, and said penicillin antibiotic is bound to an amino acid at position 3, 5, or 8 from said tyrosine anchor.

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